

PROPOSED

Covered Source Permit No. 0432-01-C
Review of Renewal Application No. 0432-02

Company: Hyatt Regency

Facility Name: Hyatt Regency Maui Hotel

Equipment Location: 200 Nohea Kai Drive
Lahaina, Maui 96761
UTM Coordinates: 739,770 m E; 2,314,615 m N (OHD)

Responsible Official: Gary Bulson
Title: Director of Engineering
(808) 667-4405

Contact: Mr. Ken Lindsay
Assistant Engineering Manager
(808) 667-4766

Mr. Alex Eda
Mechanic
(808) 661-1234

Applicant's Mailing Address: 200 Nohea Kai Drive
Lahaina, Hawaii 96761

Proposed Project:

The facility consists of two (2) 300 HP fire tube steam boilers operating with fuel oil no. 2 as a primary fuel and LPG as backup. LPG is only used during boiler inspections and as an emergency fuel. The applicant submitted a renewal application with no proposed modifications.

The boilers provide hot water and steam for the Hyatt Regency Maui Hotel. The boilers are physically prevented from simultaneous operation by control interlocks allowing only a single boiler to operate at any one time; the two boilers vent out of the same stack. Due to the size and installation date (1992) of boiler number B-2, it is subject to 40 CFR Part 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Boiler number B-1 was installed in 1979 and is not subject to subpart Dc. During the review for the initial covered source permit a Hyatt representative requested that both boilers be included in the covered source permit.

The facility SIC code is 7011, Hotels and Motels.

PROPOSED

Equipment:

Equipment Description

Description				Fuel Usage
Two (2) 300 hp fire tube steam boilers (industrial):				Each boiler: 89.28 gallons of fuel oil no. 2 per hour maximum, fuel sulfur content \leq 0.5% or 136.6 gallons of LPG per hour maximum
<u>unit</u>	<u>description</u>	<u>capacity</u>	<u>date installed</u>	
B-1:	York-Shipley Model #SPH-300-N/2 Serial #79-12551	12.5 MMBtu/hr	1979	
B-2:	York-Shipley Model #SPHV-300-N/2-LP Serial #92-18871	12.5 MMBtu/hr	1992	

Fuel usage can be confirmed by dividing the heat input capacity of the boiler by the heating value of the fuel:

Fuel oil no. 2

$12.5 \text{ MMBtu/hr} \div 0.140 \text{ MMBtu/gallon} = 89.28 \text{ gallons per hour}$

Fuel oil no. 2 heating value of 0.140 MMBtu/gallon is from AP-41 Section 1.3 Fuel Oil Combustion (9/98)

LPG

$12.5 \text{ MMBtu/hr} \div 0.0915 \text{ MMBtu/cf} = 136.6 \text{ gallons per hour}$

LPG fuel heating value of 0.0915 MMBtu/cf is from AP-42 Section 1.5 Liquefied Petroleum Gas Combustion (10/96)

Air Pollution Controls:

The boilers are not equipped with add on air pollution controls.

Applicable Requirements:

Hawaii Administrative Rules (HAR):

Chapter 11-59, Ambient Air Quality Standards

Chapter 11-60.1 Air Pollution Control

Subchapter 1, General Requirements

Subchapter 2, General Prohibitions

11-60.1-31 Applicability

11-60.1-32 Visible Emissions

11-60.1-38 Sulfur Oxides from Fuel Combustion

Subchapter 5, Covered Sources

Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning

11-60.1-111 Definitions

11-60.1-112 General Fee Provisions for Covered Sources

11-60.1-113 Application Fees for Covered Sources

11-60.1-114 Annual Fees for Covered Sources

Subchapter 8, Standards of Performance for Stationary Sources

PROPOSED

11-60.1-161 New Source Performance Standards

NSPS, MACT, and NESHAPS Applicability: NSPS applies to only boiler no. B-2 (installed in 1992), the boiler is subject to 40 CFR Part 60, Subpart A, General Provisions and Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Subpart Dc applies to steam generating units for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 100 MMBtu/hr or less, but greater than or equal to 10 MMBtu/hr. Boiler no. B-1 was installed in 1979. The boilers are not regulated by 40 CFR Part 61 National Emissions Standards for Hazardous Air Pollutants or 40 CFR Part 63 National Emission Standards for Hazardous Air Pollutants for Source Categories. MACT and NESHAPS do not apply to this facility.

CAM applicability: The facility is not subject to Compliance Assurance Monitoring since it is not a major stationary source.

PSD Applicability: PSD does not apply since this facility is not a major stationary source.

BACT Applicability: A Best Available Control Technology (BACT) analysis is required for new or modified sources if the net increase in pollutant emissions exceeds significant levels as defined in HAR §11-60.1-1. This facility is an existing source with no proposed modifications, therefore, a BACT analysis is not required.

Applicability of Part 51, Subpart A, Emission Inventory Reporting Requirements - Consolidated Emissions Reporting Rule (CERR):

40 CFR Part 1, Subpart A - Emission Inventory Reporting Requirements, determines the applicability of compliance emissions reporting (CER) based on the emissions of each air pollutant from the facility that emits at the CER triggering levels show in the table below:

Minimum Point Source Reporting Thresholds by Pollutant

Pollutant	Annual Cycle Type A Sources (tpy)	Three-Year Cycle Type B Sources (tpy)	Facility Emissions (tpy)
SO _x	≥2500	≥100	28.19
VOC	≥250	≥100	0.46
NO _x	≥2500	≥100	12.29
CO	≥2500	≥1000	2.92
Pb		≥5	4.93e-04
PM ₁₀	≥250	≥100	0.39
PM _{2.5}	≥250	≥100	0.10
Ammonia	≥250	≥100	not expected

PROPOSED

The facility is not subject to the CER rule.

Annual Emission Reporting: As a covered source, the facility is subject to annual emissions reporting requirements.

Synthetic minor applicability: A synthetic minor is a facility that without limiting conditions, physical or operational, emits above the “major” source triggering levels as defined by HAR 11-60.1-1 for either criteria pollutant(s) or hazardous air pollutant(s). This facility is not a synthetic minor. See **Project Emissions** section.

Insignificant Activities: The applicant identified a 400 kW (536 hp) diesel engine generator as an insignificant activity under HAR §11-60.1-82(f)(5). The generator is an emergency unit operated only during power outages, and maintenance and testing of the unit. It is fired exclusively on fuel oil no. 2 with a sulfur content not exceeding 0.5% by weight. The maximum quantity of fuel fired in the generator is 28.9 gallons per hour (4.05 MMBtu/hr).

When emissions from the generator operating 500 hours per year are combined with emissions from one 300 hp boiler operating 8,760 hours per year the facility remains a non-major source of emissions:

Facility-Wide Pollutant Emissions
(Including permitted and insignificant equipment)

Pollutant	Generator Emission Rate ^b (lb/MMBtu)	Generator Max. Heat Input (MMBtu/hr)	Generator Emission Rate (lb/hr)	Generator Emissions at 500 hrs/yr (tpy)	Single Boiler Emissions at 8,760 hrs/yr (tpy)	Total Emissions (tpy)
PM	0.31	4.05	1.26	0.31	0.78	1.09
PM _{2.5}	0.31	4.05	1.26	0.31	0.39	0.70
PM ₁₀	0.31	4.05	1.26	0.31	0.10	0.41
SO ₂ ^a	----	4.05	2.03	0.51	27.77	28.28
NO _x	4.41	4.05	17.86	4.47	7.82	12.29
CO	0.95	4.05	3.85	0.96	1.96	2.92
TOC	0.36	4.05	1.46	0.36	0.10	0.46
Total HAPs	6.37e-03	4.05	2.58e-02	6.45e-03	3.10e-02	3.75e-02

^a Mass balance calculation of SO₂:

$(28.9 \text{ gal/hr})(7.05 \text{ lb/gal})(0.005 \text{ fuel sulfur content}) = 1.019 \text{ lb sulfur/hr}$

Ratio of the molecular weight of sulfur:sulfur dioxide: $S / SO_2 = 32.06 / 64.06 = 1.019 / x$

$x = 2.03 \text{ lb SO}_2/\text{hr}$

^b AP-42 Table 3.3-1 Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines (10/96)

Review Date: January 11, 2005

Reviewed by: CL

PROPOSED

AP-42 Table 3.3-2 Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines (10/96)

Alternate Operating Scenarios: The applicant does not propose any alternate operating scenarios.

Project Emissions:

Emissions from one boiler burning fuel oil no. 2:

Criteria Pollutant Emissions (One Boiler)

Pollutant	Emission factor ^b (lb/10 ³ gal)	Fuel Use (10 ³ gal/hr)	Emissions (lbs/hr)	Emissions at 8,760 hrs/yr (tpy)	Emissions (g/s)
PM	2	8.93e-02	0.18	0.78	2.25e-02
PM ₁₀	1	8.93e-02	0.09	0.39	1.12e-02
PM _{2.5}	0.25	8.93e-02	0.02	0.10	2.81e-03
SO ₂	71 ^a	8.93e-02	6.34	27.77	7.99e-01
NO _x	20	8.93e-02	1.79	7.82	2.25e-01
CO	5	8.93e-02	0.45	1.96	5.62e-02
TOC	0.252	8.93e-02	0.02	0.10	2.83e-03

^a SO₂ emission factor = 142(S)
= 142 (sulfur content of fuel in percentage by weight)
= 142 (0.5)
= 71 lb/10³ gal

^b AP-42 Table 1.3-1 Criteria Pollutant Emission Factors for Fuel Oil Combustion, Boilers < 100 MMBtu Distillate Oil Fired (9/98)

AP-42 Table 1.3-3 Emission Factors for Total Organic Compounds (TOC), Methane, and Nonmethane TOC (NMTOC) from Uncontrolled Fuel Oil Combustion, Industrial Boilers Distillate Oil Fired (9/98)

AP-42 Table 1.3-6 Cumulative Particle Size Distribution and Size-Specific Emission Factors Uncontrolled Industrial Boilers Firing Distillate Oil (9/98)

PROPOSED

Hazardous Air Pollutant Emissions (One Boiler)

Pollutant	Emission factor ^a (lb/10 ³ gal)	Fuel Use (10 ³ gal/hr)	Emissions (lb/hr)	Emissions at 8,760 hrs/yr (tpy)
Polycyclic Organic Matter	3.30e-03	8.93e-02	2.95e-04	1.29e-03
Formaldehyde (HCOH)	6.10e-02	8.93e-02	5.45e-03	2.39e-02
Benzene	2.14e-04	8.93e-02	1.91e-05	8.37e-05
Ethylbenzene	6.36e-05	8.93e-02	5.68e-06	2.49e-05
Naphthalene	1.13e-03	8.93e-02	1.01e-04	4.42e-04
1,1,1-Trichloroethane	2.36e-04	8.93e-02	2.11e-05	9.23e-05
Toluene	6.20e-03	8.93e-02	5.54e-04	2.42e-03
o-Xylene	1.09e-04	8.93e-02	9.73e-06	4.26e-05
Acenaphthene	2.11e-05	8.93e-02	1.88e-06	8.25e-06
Acenaphthylene	2.53e-07	8.93e-02	2.26e-08	9.89e-08
Anthracene	1.22e-06	8.93e-02	1.09e-07	4.77e-07
Benz(a)anthracene	4.01e-06	8.93e-02	3.58e-07	1.57e-06
Benzo(b,k)fluoranthene	1.48e-06	8.93e-02	1.32e-07	5.79e-07
Benzo(g,h,i)perylene	2.26e-06	8.93e-02	2.02e-07	8.84e-07
Chrysene	2.38e-06	8.93e-02	2.12e-07	9.31e-07
Dibenzo(a,h)anthracene	1.67e-06	8.93e-02	1.49e-07	6.53e-07
Fluoranthene	4.84e-06	8.93e-02	4.32e-07	1.89e-06
Fluorene	4.47e-06	8.93e-02	3.99e-07	1.75e-06
Indo(1,2,3-cd) pyrene	2.14e-06	8.93e-02	1.91e-07	8.37e-07
Phenanthrene	1.05e-05	8.93e-02	9.37e-07	4.11e-06
Pyrene	4.25e-06	8.93e-02	3.79e-07	1.66e-06
OCDD	3.10e-09	8.93e-02	2.77e-10	1.21e-09
Total			6.46e-03	2.83e-02

^a AP-42 Table 1.3-8 Emission Factors for Nitrous Oxide (N₂O), Polycyclic Organic Matter (POM), and Formaldehyde (HCOH) from Fuel Oil Combustion, Distillate Oil Fired (9/98)

AP-42 Table 1.3-9 Emission Factors for Speciated Organic Compounds from Fuel Oil Combustion (9/98) (data for residual oil fired boilers)

PROPOSEDHAP Trace Element Emissions
(One Boiler)

Pollutant	Emission Factor ^a (lb/10 ¹² Btu)	Heat Input (10 ¹² Btu/hr)	Emissions (lb/hr)	Emissions at 8,760 hrs/yr (tpy)	Emissions (g/s)
As	4	1.25e-05	5.00e-05	2.19e-04	--
Be	3	1.25e-05	3.75e-05	1.64e-04	--
Cd	3	1.25e-05	3.75e-05	1.64e-04	--
Cr	3	1.25e-05	3.75e-05	1.64e-04	--
Pb	9	1.25e-05	1.12e-04	4.93e-04	1.42e-05
Hg	3	1.25e-05	3.75e-05	1.64e-04	--
Mn	6	1.25e-05	7.50e-05	3.28e-04	--
Ni	3	1.25e-05	3.75e-05	1.64e-04	--
Se	15	1.25e-05	1.87e-04	8.21e-04	--
Total			6.11e-04	2.68e-03	--

The facility has the potential to emit 3.15e-02 tons of HAP's per year

^a AP-42 Table 1.3-10 Emission Factors for Trace Elements from Distillate Fuel Oil Combustion Sources (9/98)

Air Quality Assessment:

During the review for the initial covered source permit, an ambient air quality impact analysis using the EPA SCREEN3 model was completed for the operation of one 300 HP boiler. A modeling analysis was not performed for the permit renewal process since the applicant is not proposing any modifications to the facility

The last analysis generated the following maximum predicted concentrations for one boiler:

Air Pollutant	Averaging Time	U.S. EPA Scaling Factor	Emission Rate (g/s)	Model Concentration (µg/m ³)	Total Impact (µg/m ³)	State ^a Ambient Air Standard (µg/m ³)	Percent Standard
PM ₁₀	24-Hours	0.4	1.12e-02	315.5	1.41	150	1%
	Annual	0.2	1.12e-02	315.5	0.71	50	1%
SO _x	3-Hour	0.9	7.99e-01	315.5	226.88	1300	17%
	24-hour	0.4	7.99e-01	315.5	100.83	365	28%
	Annual	0.2	7.99e-01	315.5	50.42	80	63%
NO _x	Annual	0.2	2.25e-01	315.5	14.23	70	20%
CO	1-Hour	1.0	5.62e-02	315.5	17.73	10,000	0.18%
	8-hours	0.7	5.62e-02	315.5	12.41	5,000	0.25%
Pb	quarterly	0.4	1.42e-05	315.5	1.79e-03	1.5	0.12%

^a State Ambient Air Quality Standards is more stringent than the National Ambient Air Quality

Review Date: January 11, 2005

Reviewed by: CL

Standards.

The maximum concentration as projected by SCREEN3, 315.5 $\mu\text{g}/\text{m}^3$, occurred 140 meters from the stack.

The predicted impacts from one 300 HP Boiler are below State and Federal Ambient Air Quality Standards.

Significant Permit Conditions:

1. Condition: Only one of the two boilers may be operated at any time. In no event shall the boilers be operated simultaneously.

Purpose: Existing permit condition. The modeling analysis reflects the operation of only one boiler which the applicant proposed during the initial review.
2. Condition: A log shall be maintained for the permanent recording of boiler operations for the purpose of complying with the operational limit specified in Special Condition No. C.1. The following information shall be recorded each time a boiler is started or shut off:
 - a. The unit number (B-1 or B-2) of the boiler operated;
 - b. The date and time the boiler is started; and
 - c. The date and time the boiler is shut off.
Purpose: To monitor compliance with the condition limiting the permittee to operating only one boiler at any time.
3. Condition: A non-resetting volumetric flow meter shall be installed, operated, and maintained in the fuel line servicing the two (2) 300 HP boilers for the permanent recording of the total gallons of fuel oil no. 2 fired in each of the boilers. The following records shall be maintained:
 - a. The unit number (B-1 or B-2) of the boiler for which the fuel usage is being recorded;
 - b. The date of the meter readings;
 - c. Beginning meter readings for each day;
 - d. The type of fuel fired and the total fuel used (gal) for each day; and
 - e. The type of fuel fired and the total fuel used (gal) for each year.
Purpose: To satisfy annual emissions reporting requirements and the requirements of 40 CFR Part 60 Subpart Dc.
4. Condition: A log shall be maintained for the permanent recording of the total number of hours each boiler is fired on LPG. Each time period during which the boiler begins operating on LPG and stops operating on LPG shall be considered an event. For each event, the following information shall be recorded:
 - a. The unit number (B-1 or B-2) of the boiler for which the information is being recorded;

Review Date: January 11, 2005

Reviewed by: CL

PROPOSED

- b. The date and time the boiler began operating on LPG;
- c. The date and time the boiler stopped operating on LPG;
- d. The total number of hours the boiler was fired on LPG during the recorded event; and
- e. The total number of hours each boiler was fired on LPG, on an annual basis.

Purpose: To satisfy annual emissions reporting requirements.

5. Condition: Fuel purchase receipts, showing the supplier, fuel type, sulfur content (percent by weight), date of delivery, and amount (gallons) of fuel delivered to the site for the two boilers shall be maintained. Fuel sulfur content may be demonstrated by providing the supplier's fuel certification for the type of fuel purchased and received in accordance with 40 CFR Part 60, Subpart Dc, §60.48c(f)(1).

Purpose: Per the NSPS, compliance with the fuel oil sulfur limits may be achieved using the fuel supplier certification.

Conclusion: The applicant has submitted a renewal application for Covered Source Permit No. 0432-01-C for the operation of two (2) 300 hp boilers. Only one boiler is subject to 40 CFR, Part 60, Subpart Dc. According to a representative of the Hyatt (during the processing of the initial CSP application), it is preferred that both boilers be included in the covered source permit. Only one boiler is permitted to operate at any time; the two boilers are physically prevented from simultaneous operation by control interlocks on the equipment.

The modeling analysis completed during the initial review demonstrates the facility will operate in compliance with State and Federal ambient air quality standards. The renewal of the Covered Source Permit is recommended based on the review of the information provided by the applicant and subject to the permit conditions and forty-five day EPA review.